

Middle Pacific coast region, 4th, 5th, 13th, 17th, 18th, 22d, 23d, 27th.

Solar halos were also reported from the following stations not included in the districts named above: Saint Vincent, Minnesota, 28th; Bismarck, Dakota, 28th; Campo, California, 1st; Carson City, Nevada, 23d; Salt Lake City, 18th, 22d, 23d, 24th, 28th, 31st.

LUNAR HALOS.

Lunar halos have been observed in the various districts on the following dates:

New England, 23d, 24th, 25th, 26th, 31st.

Middle Atlantic states, 2d, 3d, 5th, 23d, 24th, 25th, 27th to 31st.

South Atlantic states, 1st, 4th, 28th, 30th, 31st.

Florida peninsula, 23d, 24th, 31st.

East Gulf states, 4th, 24th, 26th, 27th, 58th, 30th, 31st.

West Gulf states, 2d, 3d, 24th to 30th.

Ohio valley and Tennessee, 1st, 2d, 25th, 27th, 30th.

Lower lake region, 5th, 6th, 15th, 24th, 25th, 26th, 30th.

Upper lake region, 22d, 25th, 26th, 29th.

Upper Mississippi valley, 2d, 22d, 25th, 26th, 27th, 29th.

Missouri valley, 3d, 23d, 24th, 26th to 30th.

Northern slope, 24th, 25th, 27th, 28th.

Middle slope, 5th, 22d, 23d, 30th.

North Pacific coast region, 21st, 26th, 28th, 31st.

Middle Pacific coast region, 4th, 27th.

South Pacific coast region, 1st, 2d, 3d, 25th, 26th.

Lunar halos were also reported from the following stations not included in the districts named above: Stockton, Texas, 22d, 23d, 24th; Fort Yates, Dakota, 28th; Uvalde, Texas, 26th.

MIRAGE.

Indianola, Texas, 1st, 11th, 13th, 22d.

Alexandria, Dakota, 1st, 3d, 14th, 15th, 24th, 28th, 29th.

Northfield, Minnesota, 28th.

MISCELLANEOUS PHENOMENA.

SUNSETS.

The characteristics of the sky as indicative of fair or foul weather for the succeeding twenty-four hours, have been observed at all Signal Service stations. Reports from 189 stations show 5,731 observations to have been made, of which 28 were reported doubtful; of the remainder, 4,902, or 85.9 per cent., were followed by the expected weather.

SUN SPOTS.

The following record of observations has been forwarded by Mr. D. P. Todd, Director of the Lawrence Observatory, Amherst, Mass.:

DATE— May, 1882.	No. of new		Disappear'd by solar rotation.		Reappear'd by solar rotation.		Total No. visible.		REMARKS.
	Grps	Spots	Grps	Spots	Grps	Spots	Grps	Spots	
1, 4 p. m.	2	4	0	0	1	2	3	12	
2, 2 p. m.	0	8	0	0	0	5	3	20†	
3, 2 p. m.	0	3	1	3	0	3	3	20†	
4, 4 p. m.	1	3	1	3	1	1	3	18	
8, 2 p. m.	3	35†	0	0	0	0	5	55†	
10, 2 p. m.	1	5	0	3	1	5	6	55†	
17, 2 p. m.	0	0	0	0	0	0	4	90†	Many of the spots small.
18, 3 p. m.	0	0	0	2	0	0	4	90†	Many of the spots small.
19, 2 p. m.	0	0	1	2	0	0	3	90†	Many of the spots small.
20, 3 p. m.	1	5	0	0	0	0	4	90†	Many of the spots small.
22, 3 p. m.	0	0	1	25†	0	0	2	35†	
23, 2 p. m.	0	0	0	15†	0	0	2	20†	
24, 4 p. m.	1	2	1	15†	1	2	2	10	
25, 2 p. m.	0	0	0	4	0	0	2	6	
26, 2 p. m.	0	0	1	3	0	0	1	3	
27, 2 p. m.	0	0	0	0	0	0	1	3	
29, 6 p. m.	2	3	0	0	2	3	3	5	
30, 2 p. m.	0	0	0	0	0	0	3	4	
31, 3 p. m.	0	2	0	0	0	0	3	6	

†Approximated. Faculae were seen at the time of every observation.

Mr. William Dawson, at Spiceland, Indiana, reports: 1st, three groups, twenty-two spots; one large spot on the the east edge; 7th, five groups, sixty spots, mostly in northeast quadrant; one large spot north of centre; 10th, seven groups,

seventy-two spots; condensed group on east edge; 15th, five groups, one hundred and twenty-five spots; three very large groups in the eastern hemisphere; one visible to the unassisted eye; 17th, seven groups, one hundred and fifty spots; one visible to the unassisted eye; 20th, four groups, seventy-five spots; 22d, two groups, twelve spots; 24th, two groups, ten spots, one spot very close to east edge; 26th, two groups, four spots; one spot very close to west edge and three spots near east edge.

Mr. David Trowbridge, at Waterburgh, New York reports: 2d, two groups, two spots; one large spot just appeared by rotation; 3d, five groups, eleven spots; two groups appeared by rotation and one arisen; faculae in east; 5th, four groups, six spots; 6th, three groups, seven spots; 7th, seven groups, nine spots; one new group appeared by rotation; 8th, four groups, thirteen spots; 10th, four groups, nine spots; 15th, four groups, seventeen spots; the large group that disappeared on 26th of April has reappeared, and is visible without the telescope; 16th, five groups, twenty-eight spots, one new faint group near the centre of the disk; 17th, three groups, twenty-four spots; the large group is breaking up into smaller spots, but is still visible without telescope; faculae generally visible; 10th, three groups, twenty-seven spots; 19th, three groups, fifteen spots; 20th, three groups, eighteen spots; 23d, two groups, three spots; the large group visible as two large spots; 24th, one group, two spots; one group has disappeared by rotation; 26th, one group, one spot; the large group has disappeared by rotation, and a new one has appeared by rotation; 20th, two groups, two spots; one new group has appeared by rotation; 30th, three groups, three spots; one faint group has arisen.

Mr. H. D. Govey, at North Lewisburg, Ohio, reports: sun spots were observed on all clear days during the month; they were largest and most active from the 8th, to the 16th, and smallest at the beginning and close of the month.

The following record of observation has been forwarded by Mr. A. G. Bender, Sacramento, California.

DATE— May, 1882.	No. of new		Disappear'd by rotation.		Reappear'd by rotation.		Total No. of		REMARKS.
	Grps	Spots	Grps	Spots	Grps	Spots	Grps	Spots	
1, 3 30 p. m.	1	4	0	0	1	1	3	12	[spots disappeared.
2, 2 " "	1	5	0	0	0	0	3	12	One group of four
4, " "	1	2	0	0	0	0	3	7	Group which app'd
5, " "	1	3	0	0	0	0	4	10	30th ult, disapp'd.
6, " "	1	1	0	0	0	0	4	12*	Perhaps re-app'd.
8, " "	1	1	0	0	0	0	5	12*	New spots.
10, " "	1	1	0	0	0	0	5	10*	Changes in spots (size
11, " "	1	1	0	0	0	0	4	30*	and position.)
12, " "	1	5	0	0	0	0	6	35*	One group disappear'd
14, 4 " "	1	1	1	1	0	0	5	35*	
15, " "	1	1	1	5	1	5*	4	35*	One group of one spot
16, " "	1	1	1	5	1	5*	4	35*	disapp'd. Much
21, " "	1	1	1	5	1	5*	4	35*	change in groups.
22, " "	1	1	1	5	1	5*	4	20*	Two of these groups
23, " "	1	1	1	5	1	5*	4	20*	may be but one.
25, " "	1	1	1	5	1	5*	4	20*	Portion of groups dis-
26, " "	1	1	1	5	1	5*	4	20*	app'd by rotation.
29, " "	1	1	1	5	1	5*	4	20*	Remainder disapp'd
31, " "	1	1	1	5	1	5*	4	20*	by rotation.
31, " "	1	1	1	5	1	5*	4	20*	Perhaps only one gr'up
31, " "	1	1	1	5	1	5*	4	20*	of one large and five
31, " "	1	1	1	5	1	5*	4	20*	small spots.
31, " "	1	1	1	5	1	5*	4	20*	Part of group disapp'd
31, " "	1	1	1	5	1	5*	4	20*	by rotation.
31, " "	1	1	1	5	1	5*	4	20*	Rest of group disapp'd
31, " "	1	1	1	5	1	5*	4	20*	by rotation, and also
31, " "	1	1	1	5	1	5*	4	20*	the large spot.

24th cloudy; otherwise, on omitted days, only the changes due to solar rotation were observed.

*Estimated.

METEORS.

Yuma, Arizona, 14th, 20th.

Charleston, Illinois, 16th

New Corydon, Indiana, 9th, 16th.

Vevay, Indiana, 16th, 23d.

Clinton, Iowa, 22, at 2.30 a. m. A large and brilliant meteor appeared in the heavens at a point a little south of west and at an elevation of 50°. It passed rapidly downward, and

disappeared when about 10° above the horizon. During its passage it emitted a train of sparks, apparently several feet in length. Before its disappearance it broke into several fragments. Two distinct detonations were heard. Another meteor was also observed at this station on the twenty-ninth.

Monticello, Iowa, 23d, 24th.
Yates Centre, Kansas, 8th.
Woodstock, Maryland, 13th, 14th.
Rowe, Massachusetts, 7th.
Thornville, Michigan, 23d.
Freehold, New Jersey, 3d.
Weldon, North Carolina, 27th.
Stateburg, South Carolina, 16th, 19th, 23d, 27th.

POLAR BANDS.

Laconia, Indiana, 29th.
New Corydon, Indiana, 1st, 2d, 14th, 15th, 19th, 24th, 25th, 26th.
Gardiner, Maine, 8th.
Freehold, New Jersey, 7th.
Woodstock, Vermont, 9th.

EARTHQUAKES.

Pagosa Springs, Colorado, 11th, at 8 p. m.: A slight shock of earthquake was felt at this place. It is also reported to have been felt in the mountains about twenty-two miles east of that place.

ZODIACAL LIGHT.

New Haven, 15th.
Nashville, 5th, 10th, 15th to 19th, 22d.
Monticello, Iowa, 15th, 16th.
Yates Centre, Kansas, 5th, 8th, 15th, 16th.
Cambridge, Massachusetts, 5th, 6th, 7th, 15th, 16th.
Atco, New Jersey, 7th, 16th, 18th.
Waterburg, New York, 5th, 7th, 15th, 16th.
Dyberry, Pennsylvania, 26th.

PRAIRIE AND FOREST FIRES.

Port Huron, Michigan, 9th.
Moorhead, Minnesota, 4th, 5th, 6th.
Saint Vincent, Minnesota, 4th.
Fort Yates, Dakota, 15th.
Fort Stevenson, Dakota, 24th.
Yankton, Dakota, 1st, 2d, 3d, 6th, 12th, 13th, 25th.

North Platte, Nebraska, 1st, 3d.
Fort Brady, Michigan, 17th to 20th.
Cresswell, Kansas, 15th.
Wytheville, Virginia, 2d, 3d, 17th.

DROUGHT.

Fort Missonla, Montana, 16th; crops suffering for want of rain.

INSECTS.

Saint Meinrad, Indiana, 31st: Great damage has been done to the hay crop by the cut worm.

Guttenburg, Iowa, 31st: The chinch-bug has appeared in the wheat fields in great numbers.

Ardenia, New York, 31st: The Colorado beetle has appeared and is injuring potatoes.

Ashwood, Tennessee: The army worm appeared during the first part of the month and did great damage to wheat, barley and the meadows. A species of cut worm also appeared, and did considerable injury to cotton and garden vegetables. At the end of the month the army worm disappeared.

Little Rock, Arkansas, 12th: Farmers in this vicinity report that the cut worm is doing great injury to crops.

Nashville, Tennessee, 13th: It is reported that the army worm is doing considerable damage, especially in the eastern part of the state.

Pike's Peak, Colorado, 18th: Countless numbers of millers or moths appeared on the snow during the prevalence of a southwest wind.

Hickman, Kentucky, 12th: Reports from many sections of the country show that the army worm is very destructive and is ruining wheat, meadows and corn in many localities.

Cairo, Illinois, 10th: The army worm is doing much damage to young potatoes and corn in the surrounding country.

Huntsville, Alabama, 5th: Army worms have appeared in large numbers and are doing considerable injury to wheat.

Chinch-bugs and army worms are reported as doing much damage in Texas.

SAND STORMS.

Stockton, Texas, 4th, 9th.
Yuma, Arizona, 5th, 6th, 7th, 13th, 24th, 25th.
Winnemucca, Nevada, 9th.
Umatilla, Oregon, 2d, 10th, 18th.
Camp Thomas, Arizona, 2d, 5th, 19th, 20th, 25th, 26th, 29th, 30th.
Lewiston, 12th.

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